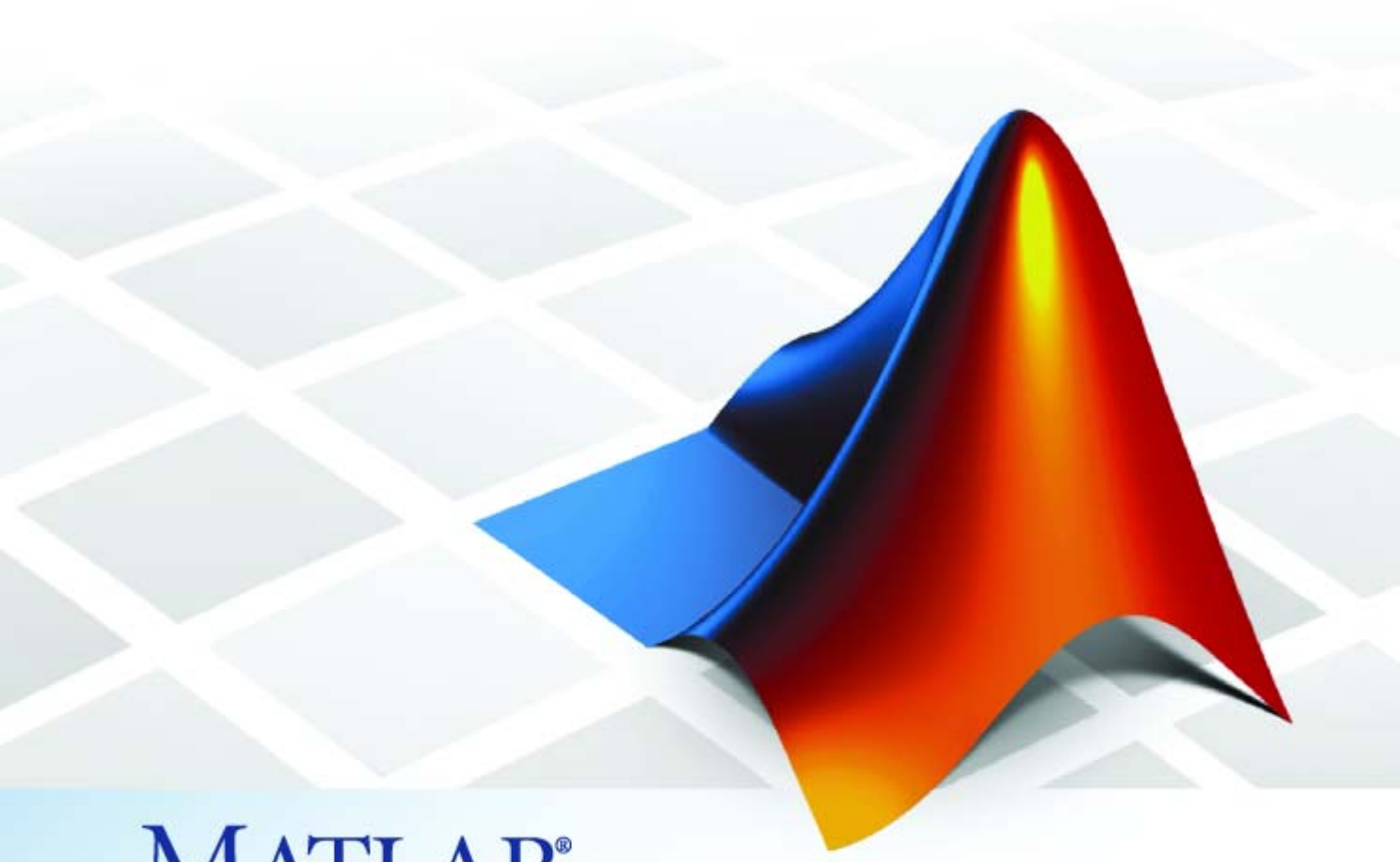
MATLAB® & Simulink® Release 2007b
Installation Guide for UNIX



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Installation Guide for UNIX

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1

Standard UNIX Installation Procedure

This topic describes how to install the MathWorks Release 2007b (R2007b) products and **FLEX**NET Licensing, the licensing software used by MathWorks products. (The **FLEX**NET Publisher Licensing Module is a product of Macrovision Corporation.)

Installing MATLAB (p. 1-3)	Describes how to install MATLAB® and the license manager on a server
After You Install (p. 1-16)	Describes post-installation tasks, such as starting MATLAB and specifying MATLAB start-up options.
Installing MATLAB on a Client System (p. 1-24)	Describes the installation procedure on client systems
Installing Additional Products (p. 1-26)	Describes how to run the installation procedure to install additional products
Removing a MATLAB Installation (p. 1-28)	Describes how to remove a MATLAB installation
Product Licensing (p. 1-29)	Describes the licensing information you need to install MathWorks products

System Requirements (p. 1-34)	Details the system requirements to run MATLAB
Mounting Your DVD Drive (p. 1-36)	Provides the commands required to mount a DVD drive on supported platforms

Installing MATLAB

In this section...

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Step 1: Before You Install

Before you run the MathWorks Installer:

- Make sure you have your License File. See "Product Licensing" on page 1-29 for more information.
- Make sure your system satisfies the requirements of the software you intend to install. For more information, see "System Requirements" on page 1-34.

Note These instructions assume that you have a basic working knowledge of UNIX. If you are not familiar with the UNIX environment, please seek the assistance of your local system administrator.

Step 2: Log in to the System

Log in to the system on which you want to install MATLAB. Superuser status is required to install the symbolic links that add MATLAB to your users' paths and to edit the system boot script to start the MATLAB license manager automatically at system boot time. If you do not have superuser status, you can still install MATLAB, but MATLAB programs must be invoked using absolute pathnames. You can also set up these links after the installation is complete.

Note If you have superuser status and you are performing an installation for another user, make sure to enter the user's login name when prompted in step 11. The installer uses this login name when creating the **FLEX**NET options file. See "Setting Up Network Named User Licensing" on page 1-17 for more information.

Step 3: Insert Product DVD or Download Product Files

The MathWorks products and documentation are distributed on a DVD and are also available for download over the Internet. Depending on your license option, you may also receive additional DVDs containing the Windows version of the software.

Insert the DVD into the DVD drive connected to your system or download product files from the MathWorks Web site. If your system requires that you mount the DVD drive you intend to use to install MATLAB, use the following instructions. If you are downloading product files over the Internet, save the files to a temporary location (referred to as `$TEMP` in this documentation). See the downloads page for detailed instructions.

Note On Linux systems, DVD drives typically mount automatically; however, the drives mount with read-only permission. You might have to change the DVD drive configuration from read-only to execute—see "Problems with Your DVD Drive" on page 3-3

Mounting a DVD Drive

To mount a DVD drive, perform this procedure:

1. Create a directory to be the mount point for the DVD drive. For example:

   ```
   mkdir /dvd
   ```

2. Put the DVD in the DVD drive with the label face up.

3. Execute the command to mount the DVD drive on your system. You can install the software from either a locally mounted DVD drive or from a remotely mounted DVD drive. For more information about these options, see “Mounting a DVD Drive Remotely” on page 1-36.

Note Do not move to the newly mounted DVD directory.

Step 4: Create the Installation Directory

Create the installation directory and move to it, using the `cd` command. Subsequent instructions in this book refer to this directory as *`matlabroot`*. For example, to install into the location `/usr/local/matlab75`, use these commands.

```
cd /usr/local
mkdir matlab75 % Needed for first time installation only
cd matlab75
```

You can specify any name for the installation directory. However, do not specify a directory name that contains an at (@) sign or a dollar ($) sign. Also, do not include a directory named `private` as part of the installation path.

Note Do not install MATLAB 7.5 over any previous released version of MATLAB.

Step 5: Put the License File in the Installation Directory

Move your License File, named `license.dat`, into the *`matlabroot`* directory. The installer looks for the License File in the *`matlabroot`* directory and, after processing it, moves the License File to *`matlabroot`*`/etc` during installation. For more information about License Files, see “Creating a License File” on page 1-30.

Note If you are upgrading an existing MATLAB installation, rename the License File in *`matlabroot`*`/etc`. The installer will not process the new License File if it finds an existing License File in *`matlabroot`*`/etc`.

Step 6: Start the Installer

If you are installing from a DVD, execute the following command to run the MathWorks Installer.

```
/dvd/install &
```

If you are installing from downloaded files, extract the installer in the `$TEMP` directory. For example, on Linux systems run the following command.

```
tar -xf boot.ftp
```

Once you have expanded all the installer files in the `$TEMP` directory, execute the appropriate command to run the MathWorks installer on your platform.

```
./install
```

The installer displays the following welcome dialog box.

The MathWorks Installer
MATLAB® Installer
Welcome to the MATLAB R2007b installer.
(c) Copyright 1984-2006 The MathWorks, Inc.
The MathWorks products are protected by one or more
U.S. patents. See www.mathworks.com/patents.
OK
Cancel
Help

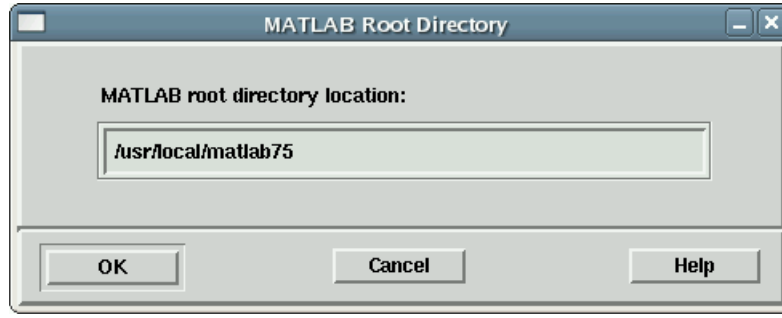
Step 7: Review the License Agreement

Accept or reject the software licensing agreement displayed. If you accept the terms of the agreement, click **Yes** to proceed with the installation.

License Agreement
Do you accept the terms of the license agreement?
If these terms are agreeable to you, please indicate so by clicking the Yes button below.
Installation will not continue if you do not click the Yes button.
The MathWorks, Inc.
Software License Agreement
IMPORTANT NOTICE
THE LICENSE AGREEMENT TOGETHER WITH ANY APPLICABLE ADDENDUM REPRESENT
THE ENTIRE AGREEMENT BETWEEN YOU (THE "LICENSEE") AND THE MATHWORKS,
INC. ("MATHWORKS") CONCERNING THE PROGRAM(S) AND DOCUMENTATION
DELIVERED HEREUNDER.
The MathWorks, Inc. Software License Agreement
Yes
No
Print

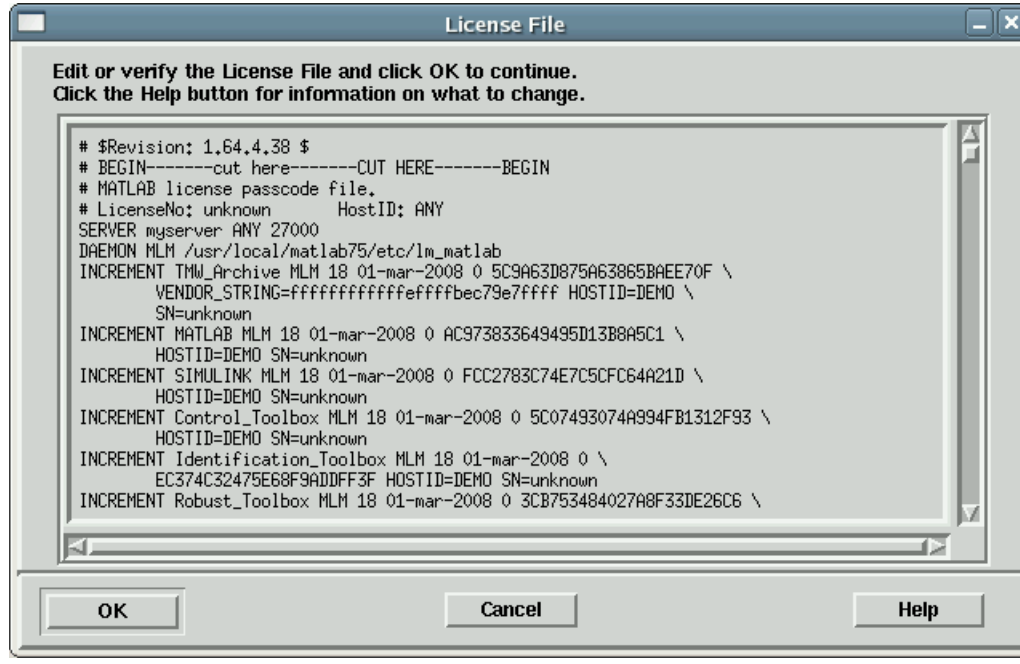
Step 8: Verify the Installation Directory Name

Verify the name of the installation directory in the MATLAB Root Directory dialog box, and then click **OK** to continue.



Step 9: Verify the License File

Verify your License File in the License File dialog box and click **OK**. If you didn't put a copy of your License File in your *matlabroot* directory, the installer displays a License File template. You can modify this template to create a valid License File.


License File
Edit or verify the License File and click OK to continue.
Click the Help button for information on what to change.
$Revision: 1.64.4.38 $
BEGIN-------cut here-------CUT HERE-------BEGIN
MATLAB license passcode file.
LicenseNo: unknown HostID: ANY
SERVER myserver ANY 27000
DAEMON MLM /usr/local/matlab75/etc/lm_matlab
INCREMENT TMW_Archive MLM 18 01-mar-2008 0 5C9A63D875A63865BAEE70F \
VENDOR_STRING=ffffffffffffefffbec79e7ffff HOSTID=DEMO \
SN=unknown
INCREMENT MATLAB MLM 18 01-mar-2008 0 AC973833649495D13B8A5C1 \
HOSTID=DEMO SN=unknown
INCREMENT SIMULINK MLM 18 01-mar-2008 0 FCC2783C74E7C5CFC64A21D \
HOSTID=DEMO SN=unknown
INCREMENT Control_Toolbox MLM 18 01-mar-2008 0 5C07493074A994FB1312F93 \
HOSTID=DEMO SN=unknown
INCREMENT Identification_Toolbox MLM 18 01-mar-2008 0 \
EC374C32475E68F9ADDFF3F HOSTID=DEMO SN=unknown
INCREMENT Robust_Toolbox MLM 18 01-mar-2008 0 3CB753484027A8F33DE26C6 \
OK
Cancel
Help

When verifying your License File:

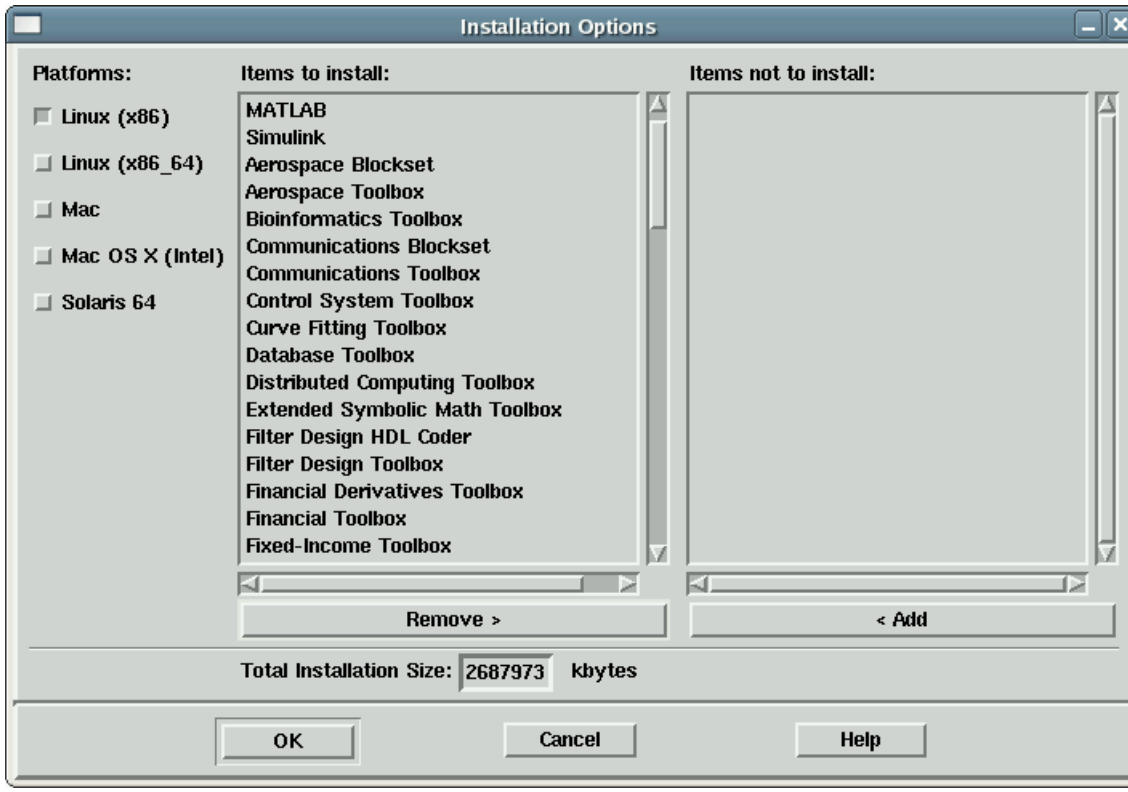
- Make sure that the expiration date, number of keys, and passcode fields in each `INCREMENT` line match the license information you received from The MathWorks.
- Delete `INCREMENT` lines for products with expired licenses. (This avoids the warning messages that appear in your log file when you start MATLAB.)
- Make sure that the `INCREMENT` lines in your License File do not wrap. You must use the line continuation character (`\`) if `INCREMENT` lines are too long to fit on one line.
- Do not use tabs to separate the fields in an `INCREMENT` line.

You can edit the License File in the text window displayed. If you want to use another text editor, click **Cancel**. Note, however, that you must edit the version of the License File that was processed by the installer, *`matlabroot`*`/etc/license.dat`, not the version of the License File you placed in the top-level installation directory in Step 5.

Note If the host ID in the comment line of your License File does not match the host ID of the system on which you are performing the installation, the installer displays an error message. You can continue with the installation, but you will not be able to start MATLAB on this system. For more information, see "Problems with a Host ID Mismatch" on page 3-3.

Step 10: Specify the Products to Install

Specify the products you want to install in the Installation Options dialog box, and then click **OK** to continue. The license manager selection appears at the end of the list.



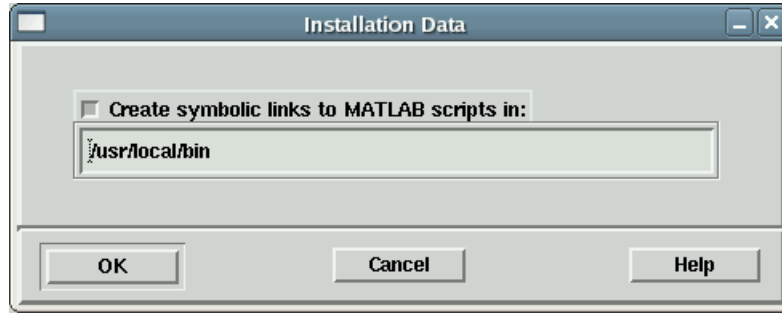
By default, the installer lists all the products that you are licensed to install in the **Items to install** pane of this dialog box. Each product includes the documentation, in compressed form. Product documentation in PDF format is only available at the MathWorks Web site. If you do not want to install an item, select it and click **Remove**. This moves the product name into the **Items not to install** pane.

The **Platforms** column identifies which product binary files are installed. By default, the check box identifying the platform on which you are running the installer is preselected. If you want to install product binary files for additional platforms, select them in the **Platforms** column.

Note The installer might display a message box stating that one or more of your licensed products are not available on the DVD. To obtain products that have been released since the DVD was produced, visit the MathWorks Web site, `www.mathworks.com`, and download them. Click **Close** to continue with the installation.

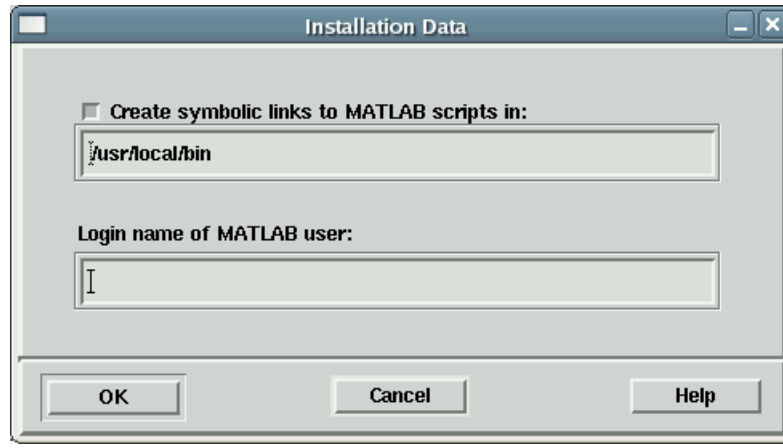
Step 11: Specify Location of Symbolic Links

In the Installation Data dialog box, you specify where you want to put symbolic links to the `matlab` and `mex` scripts. Specify a directory such as `/usr/local/bin` that is common to all your users' paths and click **OK** to continue with the installation.



Specifying Login Name for Individual Licenses

If you have an Individual license, the Installation Data dialog box asks you to enter a login name (also referred to as *username*). Specify the login name of the user that will be using this installation of MATLAB. The installer uses this information when creating the **FLEX**NET options file. See "Setting Up Network Named User Licensing" on page 1-17 for more information.



Note If you are updating an existing MATLAB installation and it already contains a **FLEX**NET options file (`MLM.opt`), the installer does not prompt for a login name.

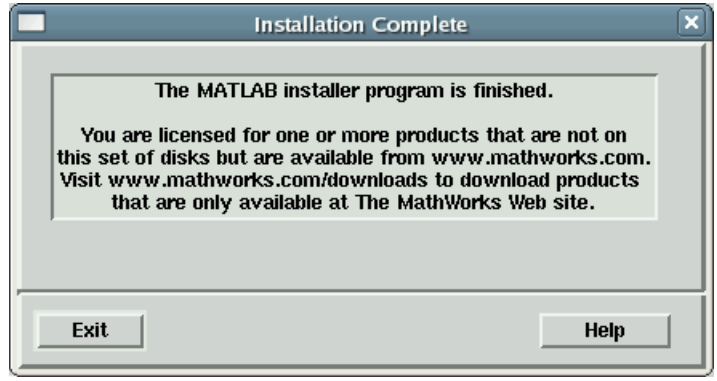
Step 12: Begin the Installation

The installer displays the Begin Installation dialog box. Click **OK** to begin the installation.

After you click **OK**, the installer displays a dialog box indicating the progress of the installation.

Step 13: Exit the Installer

After the installation is complete, the installer displays the Installation Complete dialog box. This dialog box informs you of some optional, post-installation setup and configuration steps you might want to perform, including starting the license manager. The license manager must be running to start MATLAB. See "After You Install" on page 1-16 for more information. Click **Exit** to dismiss the installer.


Installation Complete
The MATLAB installer program is finished.
You are licensed for one or more products that are not on this set of disks but are available from www.mathworks.com. Visit www.mathworks.com/downloads to download products that are only available at The MathWorks Web site.
Exit
Help

After a successful installation, your MATLAB installation directory contains the subdirectories and files listed in the following table. (Your installation might include additional subdirectories, depending on the products you installed.)

Directory	Description
`/bin`	Scripts for executing the MATLAB system and computer-specific subdirectories for the binary images
`/etc`	Files associated with the license manager, including `license.dat` and platform-specific subdirectories
`/extern`	Subdirectory containing source, include files, and libraries for the external interfaces
`/help`	MATLAB online documentation files
`/java`	MATLAB Java `jar` files
`/sys`	Tools and operating system libraries that MATLAB depends on and that may not be generally available on a user's system

Directory	Description
`/toolbox`	Toolbox subdirectories
`/X11`	Files containing keyboard mapping and default window parameters for MATLAB, Simulink®, and icon bitmaps

After You Install

In this section...
“Setting Up Network Named User Licensing” on page 1-17
“Starting the License Manager” on page 1-18
“Starting MATLAB ” on page 1-22
“Specifying Print Options” on page 1-23
“Specifying Documentation Viewing Options” on page 1-23
“Specifying MATLAB Startup Options” on page 1-23
“Configuring MATLAB Products” on page 1-23

Setting Up Network Named User Licensing

If you have a network Named User license, you might need to perform the following tasks:

- "Verify That All Licensed Users Are Listed in Options File" on page 1-17
- "Verify That License File Includes Location of Options File" on page 1-18

Verify That All Licensed Users Are Listed in Options File

The installer creates a **FLEX**NET options file, *matlabroot*/etc/MLM.opt, as part of the installation process. In Named User installations, this options file specifies which users have permission to use specific products.

When it creates the options file, the installer puts in an INCLUDE line for each product. The INCLUDE line specifies which user can use the product. By default, the installer puts the login name you specified in "Step 11: Specify Location of Symbolic Links" on page 1-12 in these INCLUDE lines. You might need to edit this options file to specify other users.

For example, if the login name specified during installation was sysadmin, the options file would look like this:

```
INCLUDE MATLAB USER sysadmin
INCLUDE Signal_Toolbox USER sysadmin
INCLUDE Optimization_Toolbox USER sysadmin
```

You must replace sysadmin in these INCLUDE statements with the login name of the licensed user:

```
INCLUDE MATLAB USER judy
INCLUDE Signal_Toolbox USER judy
INCLUDE Optimization_Toolbox USER judy
```

If multiple users are licensed for the same product, you must create a separate INCLUDE line for each user. Alternatively, you can group users together in a GROUP statement and then specify the group in the INCLUDE statement. The following example shows how to use GROUP statements in an options file. Because the installer includes the GROUPCASEINSENSITIVE option in the options file and sets it to ON, login names are not case sensitive in the GROUP statements.

Note If you edit the options file, make certain that there are no extra space characters at the end of each `INCLUDE` line.

```
GROUPCASEINSENSITIVE ON
GROUP matlab_users tom judy mike jean brad
GROUP signal_users tom mike brad
INCLUDE MATLAB GROUP matlab_users
INCLUDE Signal_Toolbox GROUP signal_users
INCLUDE Optimization_Toolbox USER mike
INCLUDE Optimization_Toolbox USER jean
```

Verify That License File Includes Location of Options File

Check that the `DAEMON` line in your License File includes the options file location, `options=`*`matlabroot`*`/etc/MLM.opt`, where *`matlabroot`* is your MATLAB installation directory.

Note Do not confuse your License File with your **FLEX**NET options file. The License File contains the encrypted passcodes for each product you are licensed to install and run. The **FLEX**NET options file is a text file that contains license manager options statements, such as `INCLUDE`, `EXCLUDE` and `GROUP` lines.

Starting the License Manager

The license manager must be running to start MATLAB. This section describes how to start the license manager at the command line and automatically at boot time.

- "At the Command Line" on page 1-19
- "At Boot-Time" on page 1-19

At the Command Line

If the license manager daemons are not running, you can start them by executing the `lmstart` script (located in the *`matlabroot`*`/etc` directory). The `lmstart` script stops any currently running daemons and starts new ones.

Note A user other than root should run the `lmstart` script because it is a security risk to run any program as root that does not require root permissions. The license manager (`lmgrd`) does not require root permissions. If you must start the license manager as root, use the UNIX `su` command to start `lmgrd` as a nonprivileged user:

```
su username -c "lmgrd -c license_file -l /var/tmp/LM_TMW.log"
```

where `username` is a nonprivileged user.

At Boot-Time

You can start the license manager automatically at boot-time by editing the system boot script. MATLAB provides the set of Bourne shell commands required to start the license manager on each UNIX system. These boot script files are in the *`matlabroot`*`/etc` directory. Each file has the name `flexnet.boot.`*`system`*, where *`system`* identifies the system type.

For example, the following is the contents of the file `flexnet.boot.linux`, which contains the boot script commands required to start the license manager on Linux systems. When you add these commands to a boot script, you must replace the word *`username`* that is used as an argument to the `/etc/lmboot_TMW` command in the script (highlighted below) with an actual user name (login name). Do not specify the name associated with superuser. For security reasons the license manager daemons cannot be owned by superuser.

```
#!/bin/sh
#
case "$1" in
   start)
        if [ -f /etc/lmboot_TMW ]; then
            /etc/lmboot_TMW -u username && echo 'MATLAB_lmgrd'
        fi
        ;;
   stop)
        if [ -f /etc/lmdown_TMW ]; then
                /etc/lmdown_TMW  > /dev/null 2>&1
        fi
        ;;
   *)
       echo "Usage: $0 {start|stop}"
       exit 1
       ;;
esac

exit 0
```

The following sections describe how to insert these Bourne shell code fragments for all supported platforms:

- "Editing the Boot Script on Linux Systems" on page 1-20
- "Editing the Boot Script on Solaris Systems" on page 1-22

Editing the Boot Script on Linux Systems. To create the boot script on Linux systems, make a copy of the `flexnet.boot.linux` file and edit the copy as described in the following procedure. You can use the same procedure to create the boot script on both 32-bit and 64-bit Linux systems.

1. Log in as `root`.
2. Create the following links, if they do not already exist.

   ```
   ln -s matlabroot/etc/lmboot /etc/lmboot_TMW
   ln -s matlabroot/etc/lmdown /etc/lmdown_TMW
   ```

3. Make a copy of the appropriate boot script file.

   The following table lists the appropriate commands for supported Linux distributions for both 32-bit and 64-bit systems.

Distribution	Command
Debian or SUSE	`cp matlabroot/etc/flexnet.boot.linux /etc/init.d/flexnet`
Red Hat or Fedora Core	`cp matlabroot/etc/flexnet.boot.linux /etc/rc.d/init.d/flexnet`

4 Edit the copy you made of the boot script file, `flexnet`, replacing the *`username`* argument to the `lmboot_TMW` script in the code with a valid user name, other than `root`. For security reasons the license manager daemons cannot be owned by superuser.

5 Look in `/etc/inittab` for the default run level.

6 Create a link in the `rc` directory associated with the default run level. The following table lists the appropriate commands for supported Linux distributions for both 32-bit and 64-bit systems, using run level 5 to illustrate.

Distribution	Command

Debian	`cd /etc/rc5.d;`
	`ln -s ../init.d/flexnet`
	`S90flexnet`

Red Hat or Fedora Core	`cd /etc/rc.d/rc5.d;` `ln -s ../init.d/flexnet S90flexnet`
SUSE	`cd /etc/init.d/rc5.d;` `ln -s ../flexnet S90flexnet`

Editing the Boot Script on Solaris Systems.

1. Log in as `root`.
2. Create the following links, if they do not already exist.

   ```
   ln -s matlabroot/etc/lmboot /etc/lmboot_TMW
   ln -s matlabroot/etc/lmdown /etc/lmdown_TMW
   ```

3. Copy the boot script code from *`matlabroot`*`/etc/flexnet.boot.sol2` and paste it at the beginning of the file `/etc/init.d/lmgrd`.

   If `/etc/init.d/lmgrd` does not exist, create it, using these commands.

   ```
   cd matlabroot/etc
   cp flexnet.boot.sol2 /etc/init.d/lmgrd
   chmod 555 /etc/init.d/lmgrd
   ```

4. Edit the copy you made of the boot script file, `/etc/init.d/lmgrd`, replacing the `username` argument to the `lmboot_TMW` script in the code with a valid user name, other than `root`.
5. Create the file (link) `/etc/rc3.d/S17lmgrd`, if it does not exist, using this code.

   ```
   cd /etc/rc3.d
   ln -s ../init.d/lmgrd S17lmgrd
   ```

Starting MATLAB

Start MATLAB by entering the `matlab` command at the system prompt.

If you did not set up symbolic links during the installation procedure (“Step 11: Specify Location of Symbolic Links” on page 1-12), you must enter the full pathname, *`matlabroot`*`/bin/matlab`, where *`matlabroot`* is the name of your MATLAB installation directory.

If you have trouble starting MATLAB, see “Problems Starting MATLAB After an Installation” on page 3-4 for some troubleshooting tips.

Specifying Print Options

MATLAB includes default settings for the various options to the `print` command. If you want to change the site-wide default settings for printing device type and location, you can edit the M-file `printopt.m`, located in the directory *`matlabroot`*`/toolbox/local`. This file contains the options that MATLAB uses for the `print` command.

Specifying Documentation Viewing Options

You can specify the Web browser to use with MATLAB by editing the `docopt.m` M-file, located in the *`matlabroot`*`/toolbox/local` directory. The MATLAB `web` function uses the `docopt.m` file when you specify the `-Browser` option. It also specifies the browser to use for links to external Web sites from the MATLAB Help browser and from Web menu items.

Specifying MATLAB Startup Options

To specify startup welcome messages, default definitions, or any MATLAB expressions that you want executed each time a user starts MATLAB, edit the `matlabrc.m` M-file in *`matlabroot`*`/toolbox/local`. MATLAB executes this file automatically each time it starts.

If you do not have write access to `matlabrc.m`, you can include startup messages, definitions, and MATLAB expressions in a file called `startup.m` and store this file in the top-level MATLAB directory. Use this file to specify the startup behavior of your own MATLAB installation.

Configuring MATLAB Products

Certain products might require configuration after installing. The documentation for each product describes additional configuration, if it is required.

Installing MATLAB on a Client System

You can set up a MATLAB network installation in several ways. Typically, you install MATLAB and the license manager on a server and users, called *clients*, access MATLAB over the network. You can, however, also install MATLAB locally on users' systems. In this configuration, the local client installations access the server only to check out a license key when MATLAB starts.

The procedure to install MATLAB on a client system is almost identical to the procedure you use to install MATLAB and the license manager on a server. The following table lists all the steps in the installation procedure and notes where they are different on client systems. For more detailed information about any of the steps, go to the corresponding section in "Installing MATLAB" on page 1-3.

Installation Procedure	Client Installation Notes
"Step 1: Before You Install" on page 1-3	Same as on a server, except you do not have to stop the license manager
"Step 2: Log in to the System" on page 1-4	Same as on a server.
"Step 3: Insert Product DVD or Download Product Files" on page 1-4	Same as on a server.
"Step 4: Create the Installation Directory" on page 1-5	Same as on a server.
"Step 5: Put the License File in the Installation Directory" on page 1-6	You must use the License File processed by the installer during the installation of the license manager on the license server. This License File is located in *matlabroot*`/etc/license.dat`.
"Step 6: Start the Installer" on page 1-6	Same as on a server.
"Step 7: Review the License Agreement" on page 1-8	Same as on a server.
"Step 8: Verify the Installation Directory Name" on page 1-8	Same as on a server.

Installation Procedure	Client Installation Notes
"Step 9: Verify the License File" on page 1-9	On a client, make sure the License File contains the `SERVER` and `DAEMON` lines, added by the installer during the license manager installation.
"Step 10: Specify the Products to Install" on page 1-10	Do not install the license manager. By default, the license manager appears at the end of the **Items to install** list. Select the license manager item and click **Remove** to move it to the **Items not to install** list.
"Step 11: Specify Location of Symbolic Links" on page 1-12	Same as on a server.
"Step 12: Begin the Installation" on page 1-13	Same as on a server.
"Step 13: Exit the Installer" on page 1-14.	Same as on a server.
"After You Install" on page 1-16	You do not start the license manager on client systems.

Installing Additional Products

After initial installation, you can purchase additional products that extend MATLAB and provide application-specific capabilities. To install these additional products,

1. Exit MATLAB.
2. Stop the license manager. You can use the `lmdown` command to stop the license manager. (See "License Manager Tools" on page 2-8 for a list of license management utilities.
3. Edit your existing License File or use a new License File.

   To edit your existing License File, open the *`matlabroot`*`/etc/license.dat` file in a text editor. Remove the old `INCREMENT` lines from the License File and copy *all* the new `INCREMENT` lines from your new License File into your existing License File. The new License File information includes both the new products you purchased, as well as all the existing products for which you have licenses.

   Note Avoid editing the individual `INCREMENT` lines; any changes you make might invalidate your License File. Also, do not delete the `SERVER` and `DAEMON` lines in your License File.

   If you decide to create a new License File, place the file in your MATLAB installation directory (*`matlabroot`*). For more information, see "Creating a License File" on page 1-30.

   Note If you create a new License File, you must rename the existing license file in *`matlabroot`*`/etc`, created by the installer during the original installation. If the installer finds a file named `license.dat` already exists in this directory, it will not process your new License File.

   ---

4. Perform the installation procedure, following the instructions given on each screen. When the installer presents the Installation Options dialog box,

remove all the products listed in the **Items to Install** list box except the new products you want to install.

5. After the installation is finished, restart the license manager with the `lmstart` command.

Consult the documentation that comes with your new products for any additional configuration that may be required.

Saving Your MATLAB Environment

When you install a new product, the installer regenerates your path file, `pathdef.m`, and your printing and documentation preference files, `printopt.m` and `docopt.m`, respectively. If you've modified these files, the installer does not delete them. Instead it puts them in the *`matlabroot`*`/toolbox/local/old` directory and renames them. The installer appends the date and a version number to the file name. For example, the saved version of `pathdef.m` could be `pathdef.m.23Mar2007.1`.

To reuse your previous path file or preferences file, swap the newly created files with these saved versions, restoring the saved version of the file to its original name.

Note When reusing an old `pathdef.m` file, you might need to add new products that you just installed.

Removing a MATLAB Installation

To remove a MATLAB installation, enter this command

```
rm -rf matlabroot
```

where *matlabroot* represents the name of your top-level MATLAB installation directory. Make sure to exit MATLAB and stop the license manager before removing a MATLAB installation. You can use the `lmdown` command to stop the license manager. See “License Manager Tools” on page 2-8 for a list of license management utilities.

Product Licensing

In this section...
“License File Overview” on page 1-29
“Creating a License File” on page 1-30
“Obtaining or Changing Your License File” on page 1-31

This section provides the information you need about licensing to perform a typical installation. For more detailed information about License Files and licensing, see Chapter 2, “License Management”.

License File Overview

The MathWorks uses a License File to control access to its products. A License File contains a set of license passcodes that:

- Identify the products you are licensed to install and use.
- Specify the number of users that may use each product (also known as the *keys* associated with a license).
- Specify the expiration date of each license.

The following is a sample License File. Lines that begin with a pound sign (#) are comments. Do not delete these comment lines. They are used by the installer during installation. The first `INCREMENT` line containing `TMW_Archive` specifies all the products you are licensed to install. Each subsequent `INCREMENT` line identifies particular products that you are licensed to run.

```
# BEGIN------cut here------CUT HERE-----BEGIN
# MATLAB license passcode file.
# LicenseNo: 12345  HostID: ID=12345
INCREMENT TMW_Archive MLM 18 01-jan-0000 0 2C642GB67123270C021AB \
 VENDOR_STRING=4000000000000003 HOSTID=DEMO SN=220668
INCREMENT MATLAB MLM 18 01-jan-0000 1 7CC4DBA7HE9G728326742 USER_BASED \
 DUP_GROUP=U SN=12345
INCREMENT SIMULINK MLM 18 01-jan-0000 1 FD64DB754GCC8H03B2D8 \
 USER_BASED DUP_GROUP=U SN=12345
INCREMENT Signal_Toolbox MLM 18 01-jan-0000 1 \
 2D249BBH9FGFFCB9C3CCF USER_BASED DUP_GROUP=U SN=12345
# END------cut here------CUT HERE-----END
```

Creating a License File

To create your License File, follow these instructions:

1. Open a text file, using any text editor.
2. Visit the MathWorks Web site and view your licensing information. Select all the information from the `BEGIN` line to the `END` line, inclusive. Make sure to select all the information contained in this section, including the comment lines.
3. Copy all the selected license information and paste it into the open text file.

   In general, do not edit the licensing information; you may invalidate a license. However, note the following:

   - Make sure that there are no line breaks between the start and end of an `INCREMENT` line. If an `INCREMENT` line must continue onto more than one line, use the line continuation character \ (backslash), as in the following:

   ```
   INCREMENT Signal_Toolbox MLM 18 01-jan-0000 1 \
      2D249BB79FGFFCB9C3CCF USER_BASED DUP_GROUP=U SN=12345
   ```

   - Make sure that there is a space between each field in the `INCREMENT` line. Do not use tabs to separate these fields.
   - Note that License Files are case sensitive.

4 Save the text file, naming it `license.dat`, and store it temporarily in any convenient directory. Before you run the installer, you must move the License File into your MATLAB installation directory.

If you received your license passcodes in a fax, create the License File in the same way, typing in the license passcode information exactly as it appears in the fax.

Obtaining or Changing Your License File

If you need to:

- Obtain a License File
- Transfer a license to another CPU
- Combine licenses
- Move toolboxes from one license to another
- Change a license registration
- Update your contact information

go to the MathWorks Web site at `www.mathworks.com` and click **Support**. On the support page click **Installation Troubleshooting** and look at the links under **Change License Information**. To get other kinds of licensing help, click **Customer Service Options**.

You can also obtain your PLP by contacting The MathWorks via telephone at 508-647-7000. Customers outside North America should contact their local office. To find the phone number of one of our international offices, go to the MathWorks Web site at `www.mathworks.com` and click **Contact Us** at the top of the page.

Depending on what you want to do, please have ready, or include in your e-mail or fax, the following items:

- Your e-mail address (if you have one).

- Your License Number:
  - If you have not previously installed MATLAB software at your site, you can find your License Number on the upper right corner of the packing slip. Customers outside North America may obtain this information from their local MathWorks representative.
  - If you are updating an existing MATLAB installation and MATLAB is running, type `license` or `ver` at the MATLAB prompt, or look in your existing `license.dat` file.
- The host ID for the server on which you plan to run the license manager. On Sun workstations, you can obtain the host ID by logging in to the server and executing the UNIX command `hostid`. For other UNIX systems, log in to your server and follow the instructions in the section"Determining Your Host ID" on page 1-32 .

Note Be sure to provide the host ID of the system on which you plan to run the license manager, not the host ID of a client workstation.

Determining Your Host ID

If MATLAB software is already installed, you can find your host ID by running the `lmhostid` script. You must run this command on the computer where you run the license manager. The `lmhostid` script is in the *`matlabroot`*`/etc` directory.

If MATLAB is *not* installed, use a native operating system command to find the host ID. The following table lists the operating system commands you can use to determine your host ID for each supported system. Some platforms, such as Sun, have a unique host ID. Other platforms use the Ethernet address as the host ID.

Operating System	Host ID Description	How to Obtain the Host ID	Sample Host ID
Linux	Ethernet address	`/sbin/ifconfig eth0` Use the colon-separated, hexadecimal number to the right of `HWaddr`, such as `8:0:2b:e6:87:59`. Note: To use this address as a host ID you must remove all colons (`:`) and prefix any single-digit parts of the address with a zero (0). For example, the host ID for the address above would be `08002be68759`.	`08002be68759`
Mac OS X	Ethernet address	Open the Apple System Profiler application in `/Applications/Utilities`. Look in the **Network overview** of the **System Profile**. You can also use the command `netstat -I en0` assuming `en0` is the Ethernet interface. The Ethernet address is a period-separated, hexadecimal number, such as `8.0.2b.e6.87.59`. Note: To use this address as a host ID, you must remove the periods (.) and prefix any single-digit parts of the address with a zero (0). For example, the host ID for the address above would be `08002be68759`.	`08002be68759`
Sun SPARC	32-bit host ID	Enter the `hostid` command.	`170a3472`

System Requirements

In this section...

"Platforms" on page 1-34

"Graphics" on page 1-35

"Compilers (for MEX Files)" on page 1-35

"License Management" on page 1-35

Note For the most up-to-date information, view the system requirements page at the MathWorks Web site, `www.mathworks.com` .

Platforms

The following system configurations are supported. For any other 32-bit or 64-bit Linux distribution not explicitly listed, R2007b requires the distribution be built using Kernel 2.4.x or 2.6.x and glibc (glibc6) 2.3.4 or higher.

Solaris

	Operating Environment	Processor	Disk Space	RAM
64-bit MathWorks Products	Sun Solaris 10 Requires all recommended patches.	SPARC, UltraSPARC	510 MB (MATLAB only)	512 MB (1024 MB recommended)

Linux

	Operating Environment	Processor	Disk Space	RAM
32-bit MathWorks Products	Red Hat Enterprise Linux, V.4 and above Fedora Core 4 and above Debian 3.1 and above Other distributions	Intel Pentium (Pentium IV and above) Intel Celeron Intel Xeon Intel Core AMD Athlon AMD Opteron	510 MB (MATLAB only)	512 MB (1024 MB recommended)
64-bit MathWorks Products	SuSE 9.3 and above Other distributions	Intel Pentium (Pentium IV and above) Intel Celeron Intel Xeon Intel Core AMD 64	510 MB (MATLAB only)	512 MB (1024 MB recommended)

Graphics

- 24-bit graphics display for Sun Solaris

Compilers (for MEX Files)

To view an up-to-date list of supported compiler versions for creating MEX files, visit the support page on the MathWorks Web site.

License Management

- Some license types require a license server running **FLEX**NET 10.8.2.1, which is provided by the MathWorks Installer
- TCP/IP, on all platforms when using a license server

Mounting Your DVD Drive

In this section...
"Mounting a DVD Drive Locally" on page 1-36
"Mounting a DVD Drive Remotely" on page 1-36

Mounting a DVD Drive Locally

If the DVD drive is located on your system, use the appropriate mount commands listed in the following table to mount the DVD drive. In the example commands, the word `<extension>` represents a part of the actual device name that is site specific. For example, the full device name can include the SCSI port to which your DVD drive is attached. You must supply the full device name when you use these commands.

Platform	Mount Command
Linux	`mount -t iso9660 /dev/dvd /dvd` On Linux systems, DVD drives typically mount automatically; however, the drives mount with read-only permission. You might have to change the DVD drive configuration from read-only to execute—see "Problems with Your DVD Drive" on page 3-3
Sun (Solaris)	`mount -F hsfs -o ro /dev/dsk/c0t<extension> /dvd` On Sun Solaris systems, the DVD drive mounts automatically if the volume manager is running.

Mounting a DVD Drive Remotely

If the DVD drive is located on a remote system, follow these instructions to mount the drive on your system:

Note You must be logged in as superuser to perform these steps. The examples assume `/dvd` is the default mount point; replace this with the name of your local mount point.

---

1 On the remote system, where the DVD drive is connected, mount it locally using the appropriate `mount` command from the table in the section "Mounting a DVD Drive Locally" on page 1-36.

2 On the remote system, configure the DVD drive so that it is available for mounting on your local system (i.e., exporting). Choose the appropriate export instructions for your platform from the following table.

Platform	Export Instructions

Linux	Add the following line to the `exports` file, `/etc/exports`
	
	`/dvd -ro`
	
	Export this information by executing
	`kill -s SIGHUP pid_of_rpc.mountd pid_of_rpc.nfsd`
	
	The process IDs, `pid_of_rpc.mountd`, and `pid_of_rpc.nfsd` are returned by the command
	`ps -agx`

Sun (Solaris)	Execute `share -F nfs -o ro -d <dvd device> /dvd` Note that the `-d <dvd device>` is for information purposes only. You can ignore it.

3 On your local system, mount the remote DVD drive using the appropriate mounting instructions listed in the following table. Replace `dvd_host` with the actual host name of the remote system to which the DVD drive is connected. Your site may require additional options that are not listed here. Contact your system administrator for information about site-specific options.

Platform	Mount Instructions
Linux	`mkdir /dvd` `mount -r dvd_host:/dvd /dvd`
Sun (Solaris)	`mkdir /dvd` `mount -F nfs -r dvd_host:/dvd /dvd`

2

License Management

Using the MathWorks Installer, you can set up a network installation by following the instructions in Chapter 1, “Standard UNIX Installation Procedure”. If you want to integrate your MATLAB installation into an existing license management scheme, you might need a more thorough understanding of using the **FLEX**NET license manager. This chapter provides an overview of the MathWorks product licensing.

Licensing Components (p. 2-2)	The primary components of license management and how they work together
License Manager Tools (p. 2-8)	A set of tools that you can use to perform basic license management tasks
Using Time-Outs to Free Idle License Keys (p. 2-9)	Using the **FLEX**NET time-out option to free idle license keys in concurrent configurations
Creating Advanced Configurations (p. 2-12)	Describes how to set up some advanced configurations, such as redundant license servers

Licensing Components

In this section...

"License Management Daemons" on page 2-2

"Applications" on page 2-3

"License Files" on page 2-4

Note For more detailed information about **FLEX**NET licensing, see the ***FLEX****NET Licensing End User Manual*, available in PDF form in `matlabroot/etc/enduser.pdf`, where *`matlabroot`* represents the name of your installation directory.

License Management Daemons

The MathWorks uses a license manager program, called **FLEX**NET Publisher Licensing Module (a product of Macrovision Software, Inc.), to control access to the software. **FLEX**NET licensing uses a group of processes, called *daemons*, to control access to software applications. These daemons run on a server in your network. In this section, this server is referred to as your *license server*.

License Manager Daemon

The license manager daemon (`lmgrd`) runs as a background process on a network node. This daemon is responsible for managing the initial communication between client applications, such as MATLAB, and vendor daemons associated with each licensed application.

Client applications contact the license manager daemon to request permission to run licensed software. The license manager daemon forwards the request to the vendor daemon, which grants or denies access to the software, depending on the availability of license keys. The license manager daemon is also responsible for starting and stopping the vendor daemons.

By default, The MathWorks installs the license manager daemon in a subdirectory of the MATLAB installation directory,

```
matlabroot/etc/$ARCH
```

where `$ARCH` is a platform-specific name. For example, on a Sun system the directory name is *`matlabroot`*`/etc/sol64`.

This eases the installation task and prevents conflict with other applications that use **FLEX**NET licensing. You can run several license manager daemons on the same system.

Vendor Daemon

Every vendor that uses **FLEX**NET licensing to manage the licensing of its products must supply a vendor daemon. The vendor daemon is responsible for keeping track of how many license keys are checked out for each product it controls.

By default, The MathWorks installs its vendor daemon (`lm_matlab`) in

`matlabroot``/etc`

Applications

When a user invokes MATLAB anywhere on the network, MATLAB communicates with the license manager daemon on the license server. The license manager forwards the request to the vendor daemon. The vendor daemon checks out a license key for the product. This license key checkout is transparent to MATLAB users.

The license manager program reads a License File to determine the numbers of keys you have purchased for each product.

License Files

A License File is an ASCII text file, named `license.dat`, that contains a set of valid license passcodes. To create your License File, visit the MathWorks Web site and view your license passcodes. Open an ASCII text editor, and copy the license passcode information into the file. Lines that begin with a pound sign (#) are comments. Be sure to include these comment lines when you copy and paste; the installer uses these comment lines during installation. Save the file in any convenient directory, giving it the name `license.dat`. For more information, see "Creating a License File" on page 1-30. The following is an example of a License File.

```
# BEGIN------cut here------CUT HERE-----BEGIN
# MATLAB license passcode file.
# LicenseNo: 12345  HostID: ID=12345
INCREMENT TMW_Archive MLM 17 01-jan-0000 0 2C642B67123270C021AB \
 VENDOR_STRING=400000000000003 HOSTID=DEMO SN=220668
INCREMENT MATLAB MLM 17 01-jan-0000 1 7CC4DBA78E9728326742 USER_BASED \
 DUP_GROUP=U SN=12345
INCREMENT SIMULINK MLM 17 01-jan-0000 1 FD64DB4754CC8F03B2D8 \
 USER_BASED DUP_GROUP=U SN=12345
INCREMENT Signal_Toolbox MLM 17 01-jan-0000 1 \
 2D249BB79FFFCB9C3CCF USER_BASED DUP_GROUP=U SN=12345
# END------cut here------CUT HERE-----END
```

INCREMENT Lines

Each `INCREMENT` line represents a license for a particular product. An `INCREMENT` line can include any of these elements.

```
INCREMENT product daemon release exp-date users
passcode options
```

The options may vary, depending on license type. For example, `INCREMENT` lines for Named User licenses include the `USER_BASED` option.

The `INCREMENT` line containing the `TMW_Archive` identifies the products you are licensed to install.

License File Processing

During installation, the installer processes the License File, adding two lines to the file: the `SERVER` line and the `DAEMON` line. These lines provide information about the name, location, and port number of the license manager daemon. The installer moves this processed version of the License File into the *`matlabroot`*`/etc` directory.

The following is a sample License File after being processed by the installer. Note the addition of the `SERVER` and `DAEMON` lines at the top of the file.

```
# BEGIN------cut here------CUT HERE-----BEGIN
# MATLAB license passcode file.
# LicenseNo: 12345  HostID: ID=12345
SERVER this_host ID=12345 27000
DAEMON MLM /usr/local/matlab74/etc/lm_matlab options=/usr/local/matlab74/etc/MLM.opt
INCREMENT TMW_Archive MLM 17 01-jan-0000 0 2C642B67123270C021AB \
 VENDOR_STRING=400000000000003 HOSTID=DEMO SN=220668
INCREMENT MATLAB MLM 17 01-jan-0000 1 7CC4DBA78E9728326742 USER_BASED \
 DUP_GROUP=U SN=12345
INCREMENT SIMULINK MLM 17 01-jan-0000 1 FD64DB4754CC8F03B2D8 \
 USER_BASED DUP_GROUP=U SN=12345
INCREMENT Signal_Toolbox MLM 17 01-jan-0000 1 \
 2D249BB79FFFCB9C3CCF USER_BASED DUP_GROUP=U SN=12345
# END------cut here------CUT HERE-----END
```

SERVER Line. The `SERVER` line identifies the system on which the license manager is running, using the format:

```
SERVER hostname hostid TCP_PortNumber
```

where:

- `hostname` is the name of your license server, i.e., the system on which the license manager is running.
- `hostid` can either be the host ID of the server or the string `ID=xxxx`, where `xxxx` identifies the license number. The host ID in the comment portion of the License File must match the host ID in the `SERVER` line.
- `TCP_PortNumber` specifies the TCP/IP port number used to connect to the license manager daemon. If the port number assigned to the server conflicts

with a port number used by other software, you can edit the SERVER line to change the number. You can use any port number; however, to run the daemons from a nonroot account, the port number must be greater than 1024. By default, if no port is specified, **FLEX**NET licensing uses one of the default ports in the range 27000 to 27009.

DAEMON Line. The DAEMON line identifies the name and location of the vendor daemon, using the format:

```
DAEMON vendor vendor_daemon_path options=options_file_path
```

where:

- `vendor` is the name of the vendor daemon, `MLM` for The MathWorks.
- `vendor_daemon_path` is the fully specified path to the daemon executable, for example, `/usr/local/matlab/etc/lm_matlab`.
- `options_file_path` is the full path of the **FLEX**NET options file, for Named User licenses, for example, `options=/usr/local/matlab/etc/MLM.opt`.

The DAEMON line can optionally specify the port the vendor daemon (`lm_matlab`) uses. The **FLEX**NET licensing daemon (`lmgrd`) and the vendor daemon use separate ports. To specify the vendor daemon port, use the syntax

```
DAEMON MLM /usr/local/matlab/etc/lm_matlab port=#####
```

where ##### is an open port.

Specifying the Location of the License File

By default, MATLAB expects to find the License File, `license.dat`, in the *`matlabroot`*`/etc` directory. This is the location where the installer puts the License File after processing it during installation. MATLAB reads this License File to determine the host name and port address of the license server.

You can specify a different License File using either environment variables or the `-c` command line option.

Using Environment Variables to Specify the License File Location. You can specify the License File you want to use by assigning a value to either of two environment variables: `LM_LICENSE_FILE` or `MLM_LICENSE_FILE`. The `LM_LICENSE_FILE` environment variable, if set, specifies the location of the License File for all applications using **FLEX**NET licensing on this server. The `MLM_LICENSE_FILE` environment variable also specifies the location of the License File, but only for products of The MathWorks.

To illustrate, this example specifies the location of the License File used by MathWorks products, using Bourne shell commands.

```
MLM_LICENSE_FILE=/usr/licenses/license.dat
export MLM_LICENSE_FILE
```

Note Do not specify a License File with a network path when your system is not on a network. This can cause MATLAB to hang at startup, until the network connection time-out expires.

Using the -c Command Line Option. You can also use the `-c` command line option of the `lmgrd` command to specify the License File that you want to use when you start the license manager daemon. When you use this option, you override any values that the environment variables might contain. When you use the `-c` option with the `matlab` command, you explicitly prohibit the searching of these environment variables.

License Manager Tools

MATLAB includes a set of license administration tools, available in the *matlabroot*/etc directory. This table lists these tools with a brief description of their purpose. For more details about any of these commands, see the ***FLEX****NET Licensing End User Manual*, available in PDF form in *matlabroot*/etc/enduser.pdf, where *matlabroot* represents the name of your installation directory.

Tool	Description
lmboot	Start license daemons at boot time.
lmdebug	Generate diagnostic report, and optionally e-mail it to The MathWorks, for troubleshooting license manager problems.
lmdiag	Diagnose problems when a license cannot be checked out.
lmdown	Shut down all license daemons.
lmhostid	Display the host ID of the computer on which you are running.
lmstart	Start license daemons.
lmstat	Show status of all network licensing activities. See the script for a complete set of options.
lmver	Display version number of license manager.

Using Time-Outs to Free Idle License Keys

In this section...

"Enabling License Time-Outs" on page 2-9

"Experiencing a License Time-Out" on page 2-11

"Reacquiring License Keys After a Time-Out" on page 2-11

Note You can only use time-outs with concurrent licenses.

Enabling License Time-Outs

If you have a concurrent license, you can use the **FLEX**NET licensing time-out option to automatically return idle license keys at your site. With license time-outs, the license manager automatically frees license keys that sit idle for a specified period of time, returning them to the pool of available license keys.

For example, when you start MATLAB and other products, such as toolboxes, you check out license keys for these products. If you go home without exiting your MATLAB session, these licenses remain checked out and are not available to other users. With time-out enabled, after your licenses sit idle for a specified period of time, the license manager releases the license keys for all the products you had been using and these keys become available to other users.

To take advantage of time-outs, you must specify the `TIMEOUT` option in a **FLEX**NET options file. A **FLEX**NET options file is a text file that contains license manager options statements, such as `INCLUDE`, `EXCLUDE`, and `GROUP` statements.

To enable time-outs, follow these instructions:

1. Create a **FLEX**NET options file, if one does not already exist, using any text editor. Name the file `MLM.opt` and put the file in the `etc` directory in your MATLAB installation directory. For example, you might create the file

   ```
   /usr/local/matlab/etc/MLM.opt
   ```

2 Add the TIMEOUT option to the file, using the following syntax:

```
TIMEOUT feature seconds
```

For feature, specify MATLAB. You cannot specify separate time-out values for individual MathWorks products, such as toolboxes.

For seconds, specify the amount of idle time you want to allow. The minimum value is 4 hours (14,400 seconds). If you specify a time-out value that is smaller, the minimum value is used. For example, to specify a 5-hour time-out, enter the following in your options file.

```
TIMEOUT MATLAB 18000
```

FLEXNET licensing supports the TIMEOUTALL option that you can use to specify the time-out value used for all products. The TIMEOUTALL option affects all the products listed in the License File that could include products from other vendors, not just MathWorks products. In addition, when you use the TIMEOUTALL option, the license manager log file can become misleading. For example, log file entries include whatever value you specify in the TIMEOUTALL option even if the actual value used is another value, such as the MathWorks minimum time-out value.

Note The MathWorks does not recommend using the TIMEOUTALL option.

---

3 Make sure the DAEMON line in your License File specifies the location of your options file. Open your License File in a text editor and add the options= syntax to the DAEMON line. For example, your DAEMON line might look like the following:

```
DAEMON MLM "/usr/local/matlab/etc/lm_matlab"  \
                  options=/usr/local/matlab/etc/mlm.opt
```

4 Restart the license manager. Whenever you change the License File, or change the time-out value in the options file, your must restart the license manager.

Experiencing a License Time-Out

When time-out is enabled, if you open a MATLAB session and leave it inactive for more than 4 hours, when you return, you will find MATLAB still open on your desktop, but will see the following message displayed in the Command Window:

```
Your MATLAB session has timed out.  All license keys have been
returned
```

This information is also recorded in the license manager log file, as follows:

```
Idle session.  Returning keys for <user>@<machine>
```

To learn how to view the license manager log file, see “Viewing the License Manager Log File” on page 3-5.

Reacquiring License Keys After a Time-Out

To resume a timed-out MATLAB session, just use MATLAB. If a license key is available, MATLAB checks it out automatically. Likewise, as you use the toolboxes and other products that you had checked out, MATLAB obtains license keys for these products as well.

If a license key is not available, MATLAB periodically attempts to check out a license, issuing warning messages. After 10 warnings, if a license key is still not available, MATLAB saves the workspace and exits.

Note If you return to a timed-out Simulink session, you cannot run or modify a currently open model. These menu options are disabled until a Simulink license key becomes available. You can only save a model in a timed-out Simulink session.

Creating Advanced Configurations

In this section...

"Running MATLAB on a Heterogeneous Network" on page 2-12

"Running Multiple Versions of MATLAB" on page 2-12

"Running MATLAB with Other Licensed Applications" on page 2-13

"Configuring Redundant License Servers" on page 2-14

Running MATLAB on a Heterogeneous Network

You can run MATLAB and other MathWorks products on a heterogeneous network, i.e., a network that contains a variety of UNIX and Windows systems. Any supported platform can act as a license server and serve clients that may run on different platforms. For example, UNIX servers can serve PC clients and vice versa.

Running Multiple Versions of MATLAB

To provide users with access to multiple versions of MATLAB over the network, you must perform some additional setup on your license server and possibly on client systems.

On License Server

To make multiple versions of MATLAB available in a network configuration, follow this procedure on your license server:

1. Check the version of your currently installed MATLAB. You must be running Version 5.2.x or later to be able to run multiple versions.
2. Stop the license manager. (See "License Manager Tools" on page 2-8.)
3. Install on your license server the license manager included with the current version of MATLAB. Run the installer and select the license manager in the product list. (See "Step 10: Specify the Products to Install" on page 1-10.)

On Client Systems

You must make sure that existing client installations of MATLAB use the new license manager.

On UNIX systems, you must replace the License File in client installations with the License File created by the installer during the license manager installation on your license server. The License File resides in the *matlabroot*/etc directory.

Running MATLAB with Other Licensed Applications

If you have other applications that use **FLEX**NET licensing, you can integrate the licensing of MATLAB software into this licensing scheme, sharing a single license manager, or you can handle the licensing of MATLAB software independently, running separate license managers on the same or different hosts.

The following sections describe these options. For more information, go to the Support page at the MathWorks Web site and see Technical Support solution 20746. You can also read the ***FLEX****NET Licensing End User Manual*, available in PDF form in *matlabroot*/etc/enduser.pdf, or go to the Macrovision Corporation Web page at www.macrovision.com for more information.

Sharing a Single License Manager

To share a license manager with another application, combine the DAEMON and INCREMENT lines from both License Files into a single License File. In the combined License File, keep only one SERVER line that identifies the license server host. If the other applications are using a different version of the **FLEX**NET licensing software than the MathWorks products, run the newest version of the license manager.

If you share a license manager and you centralize the license information in a License File other than *matlabroot*/etc/license.dat, you must indicate to MATLAB where the file is located. You can define the file location to MATLAB by performing one of the following:

- Create *matlabroot*/etc/license.dat as a symbolic link to the central License File.

- Redefine the `LM_LICENSE_FILE` environment variable. You can also use the `MLM_LICENSE_FILE` environment variable, where `MLM` represents the MathWorks vendor daemon. See "Specifying the Location of the License File" on page 2-6 for more information.

Running Separate License Managers

To run separate license managers, use separate License Files. If you are running them on the same host, be sure to use a different TCP port number on the `SERVER` line in each License File.

Configuring Redundant License Servers

If a large number of licenses are governed by a single license server, failure of the server becomes a serious problem. To prevent problems, you may want to set up redundant servers so that, if one server goes down, the license manager can still function.

In the redundant server configuration, three systems are designated to be license servers. All three systems must be running at the time the license manager is started. However, once the license manager is running, only two systems need to be running at any time; this is called a *quorum*. Once the daemons are up and connected on all three machines, only two machines are needed for a quorum; the loss of any one machine will not cause any licenses to be revoked.

Setting up a Redundant Installation

Perform these steps to configure a redundant installation:

1. Choose the systems that you intend to use as servers. When choosing servers, keep in mind:
   - The servers should be able to handle the network traffic associated with license management. A primary server must be chosen. This is the system to which clients connect first and which receives the majority of the network traffic. The primary server is the first server listed in the License File. If this system fails, the next server listed in the License File becomes primary.

- The servers should be running supported versions of their operating systems.

2 Request a License File from The MathWorks.

Once you have chosen the servers, determine the host ID of each server and provide them to The MathWorks when you request your License File. The MathWorks will generate an appropriate License File. The following example shows a License File that supports redundant servers. Note that the License File lists three host IDs.

```
# BEGIN-------cut here-------CUT HERE-------BEGIN
# MATLAB license passcode file.
# LicenseNo: 123           HostID: 00034660893e
#                          HostID: 00053327865e
#                          HostID: 00470635883e
INCREMENT TMW_Archive MLM 17 01-jan-0000 0  \
 CD747104B19E9036 VENDOR_STRING=87 HOSTID=DEMO SN=123
INCREMENT MATLAB MLM 17 01-jan-0000 5  \
 8D14B1B4E284F1126 HOSTID=ID=123 DUP_GROUP=UH SN=123
INCREMENT SIMULINK MLM 17 01-jan-0000 5  \
 2D0391C402879B55B HOSTID=ID=123 DUP_GROUP=UH SN=123
INCREMENT Control_Toolbox MLM 17 01-jan-0000 5  \
 0144619409A6648FE HOSTID=ID=123 DUP_GROUP=UH SN=123
INCREMENT Signal_Toolbox MLM 17 01-jan-0000 5  \
 2D2451A439F4E3D36 HOSTID=ID=123 DUP_GROUP=UH SN=123
# END---------cut here-------CUT HERE-------END
```

3 Install the license manager on the three server systems in the redundant configuration, following the instructions in “Installing MATLAB” on page 1-3. During each installation, the installer processes the License File, adding one `SERVER` line and one `DAEMON` line. For example, on the system named `pooh`, the processed License File might contain these lines.

```
SERVER pooh 00034660893e 27000
DAEMON MLM /usr/local/matlab/etc/lm_matlab
```

4 Edit the License File on each server, *`matlabroot`*`/etc/license.dat`, so that each License File contains `SERVER` lines for all three license servers. Do not copy the `DAEMON` lines; each License File should contain only one

DAEMON line. Note in the following example that the License File contains three SERVER lines and one DAEMON line.

```
# BEGIN-------cut here-------CUT HERE-------BEGIN
# MATLAB license passcode file.
# LicenseNo: 123           HostID: 00034660893e
#                          HostID: 00053327865e
#                          HostID: 00470635883e
SERVER pooh 00034660893e 27000
SERVER piglet 00053327865e 27000
SERVER rabbit 00470635883e 27000
DAEMON MLM /usr/local/matlab/etc/lm_matlab
INCREMENT TMW_Archive MLM 17 01-jan-0000 0 CD747104B91B88036 \
 VENDOR_STRING=87 HOSTID=DEMO SN=123
INCREMENT MATLAB MLM 17 01-jan-0000 5 8D14B1B4F13B8126 \
 HOSTID=ID=123 DUP_GROUP=UH SN=123
INCREMENT SIMULINK MLM 17 01-jan-0000 5 2D0391C40BE0B55B \
 HOSTID=ID=123 DUP_GROUP=UH SN=123
INCREMENT Control_Toolbox MLM 17 01-jan-0000 5 01446B1648FE \
 HOSTID=ID=123 DUP_GROUP=UH SN=123
INCREMENT Signal_Toolbox MLM 17 01-jan-0000 5 2D2451EA23D36 \
 HOSTID=ID=123 DUP_GROUP=UH SN=123
# END---------cut here-------CUT HERE-------END
```

5. Put a copy of this edited License File in the *matlabroot*/etc directory on all of the systems in the redundant configuration.

6. Start the license manager on each system in the redundant configuration and wait for the license manager daemons on the three systems to synchronize with each other. This may take a few minutes.

   If, for some reason, the license manager daemons do not connect, take the daemons down on each machine, and rerun the procedure. Network traffic can affect synchronization, so it may require several attempts to establish a proper connection.

7 Set up the client systems that access the redundant servers.

   To ensure that client systems can switch servers in the event of a failure, you must create an environment variable named `MLM_LICENSE_FILE` on each client system. The license manager reads this environment variable to determine which License Files to use. On client systems, specify the host name and port for all the servers in the redundant configuration. Use a colon to separate the names. For example:

```
port@server1:port@server2:port@server3
```

   Alternatively, you can specify this License File location information when you start MATLAB on a client, using the `-c` option with the `matlab` command.

Starting the License Manager at Boot Time

If you want the license manager to start automatically when rebooting, place a Bourne shell code fragment into the appropriate boot script by following the directions in "Starting the License Manager" on page 1-18. You must supply a valid username (not superuser) when configuring the boot script.

Note that, on each server, a link must exist between `/etc/lmboot_TMW` and *`matlabroot`*`/etc/lmboot`. This link is normally created during the installation process. However, when running multiple license servers, some or all of the systems might not have MATLAB installed. To create this link on a given server, first log in to the server as `root`, and then enter the following UNIX commands.

```
cd /etc
ln -s matlabroot/etc/lmboot lmboot_TMW
```

3

Troubleshooting

This chapter provides information that can help you solve common problems that you might encounter installing MATLAB on a UNIX system.

Problems During the Installation (p. 3-2)	Describes how to resolve common problems that can occur during installation
Problems Starting MATLAB After an Installation (p. 3-4)	Describes how to resolve common problems that can occur after the installation is complete
Getting Help with License Manager Error Messages (p. 3-9)	Lists common license manager errors you may encounter with possible solutions

If you cannot find a description here that matches your problem, check the Release Notes documentation that you received with your products. Release notes contain the most up-to-date information available about products and installation procedures. To get additional installation troubleshooting information, visit the Support page at the MathWorks Web site and click **Installation Troubleshooting**.

Problems During the Installation

In this section...
“Problems with File Permission” on page 3-2
“Problems Opening the Display” on page 3-3
“Problems with a Host ID Mismatch” on page 3-3
“Problems with Your DVD Drive” on page 3-3

Note If you can’t find an answer to your problem here, go to the Support page at the MathWorks Web site and click **Installation Troubleshooting**. There you can search for solutions and technical notes that might help.

Problems with File Permission

The installer must have write access to the installation directory. If the installer cannot write to the installation directory, it displays an error message.

To continue with the installation, dismiss the error message dialog and use the `chmod` command at the UNIX prompt to change the permission setting of the installation directory. Your file mode creation mask (also known as your user mask) controls the default permissions assigned to new files and directories. You can use the `umask` command to change this default.

The suggested file permissions are read, write, and execute permission for the user, and read and execute permission for the group and the world (other), represented in a UNIX directory listing as

```
drwxr-xr-x
```

The following example uses `chmod` to set these permissions on a directory.

```
chmod 755 matlab
```

To provide complete access to users, group, and the world, specify the value `777`.

Problems Opening the Display

If, after starting OpenWindows or Motif, the installation program outputs the `Can't open display` error message, enter the following command at the UNIX prompt:

```
xhost +x
```

Then run the installation procedure:

```
/dvd/install
```

Problems with a Host ID Mismatch

If the host ID in the comment line of your License File does not match the host ID of the system on which you are performing the installation, the installer displays the following error message on your screen:

```
Host ID in License File Doesn't Match Host ID of System
```

This typically indicates that you are using the wrong License File for this system. You can continue with the installation, but you will not be able to start MATLAB.

Problems with Your DVD Drive

To diagnose a problem with a DVD drive:

- Verify that the device is mounted correctly. See “Mounting Your DVD Drive” on page 1-36 for more information.
- Verify that the DVD device file has the correct read and execute permissions. For example, on Linux systems, DVD drives have read-only permission by default. To check a device’s permissions, use the UNIX command:

  ```
  ls -l device
  ```

  where *`device`* is the device name for your DVD drive. To change permissions, log in as superuser and run the UNIX command:

  ```
  chmod 555 device
  ```

Problems Starting MATLAB After an Installation

After a successful installation, you may encounter problems starting MATLAB. Many of these problems involve the license manager used by the MathWorks products.

To resolve this type of problem, follow these suggestions, in the order specified:

1. Take note of the error message that is displayed. The error message text can often provide information that can help you resolve the problem. (See "Getting Help with License Manager Error Messages" on page 3-9 to learn how to get information about possible solutions for each error message.)
2. Check the license manager log file for error messages and take appropriate corrective action. See "Viewing the License Manager Log File" on page 3-5 for more information. The MathWorks Installer also creates a log file each time it is run. The installer names the file `install_matlab.out` and puts the file in your top-level installation directory.
3. Make sure that the license manager daemons are running—see "Checking the Status of the License Manager Daemons" on page 3-5.
4. Verify that your client workstation can connect to the license manager over the network—see "Checking the Network Connection" on page 3-6.
5. Check the other common startup problems described in "Checking Other Startup Problems" on page 3-7.

If these troubleshooting steps do not resolve the problem you are experiencing, execute the script `lmdebug` in the *`matlabroot`*`/etc` directory and send its diagnostic results to the MathWorks Technical Support department. If you do not have e-mail access, fax the results to the MathWorks at the number listed below. For fax reports, it is also helpful to include

- The exact error message(s) received
- A copy of your License File

To contact The MathWorks Technical Support, use this form: `http://www.mathworks.com/contact_TS.html`.

Viewing the License Manager Log File

The file `/var/tmp/lm_TMW.log` contains a log of all license activity. The license manager appends a new entry to the log each time a license transaction occurs. For help interpreting error messages and suggested remedies to common errors, refer to the section "Getting Help with License Manager Error Messages" on page 3-9. The following sections cover these additional log file topics:

- "Specifying the Name of the License Manager Log File" on page 3-5
- "Monitoring the Growth of the License Manager Log File" on page 3-5

Specifying the Name of the License Manager Log File

To change the default directory where the log file is stored, specify the `-l` option with the `lmstart` script, as follows:

```
lmstart -l /home/username/lmlogs/mylogfile.log
```

Monitoring the Growth of the License Manager Log File

The license manager log file can grow to be quite large. To conserve disk space, check the size of the log file periodically and delete information from the file to reduce its size. You can also schedule a job (using the UNIX `cron` command) that regularly deletes log files older than a specified date (a process called rotating log files).

Checking the Status of the License Manager Daemons

The license manager must be running before you can start MATLAB. To determine whether the license manager daemons are operating, run the `lmstat` command on the license server.

```
cd matlabroot/etc
lmstat -a
```

You can also run the following UNIX command

```
ps -ef | grep lm
```

Check the output of these commands to determine if both the license manager daemon (`lmgrd` or `lm_TMW.ld`) and the vendor daemon (`MLM`) are running.

Starting the License Manager Daemons

If either the license manager or vendor daemon is not running, restart the daemons by running the `lmstart` script, located in the *`matlabroot`*`/etc` directory.

Removing Duplicate Daemons

You can only run one `MLM` daemon. To remove duplicate `MLM` daemons, log in as superuser, and then execute the following command:

```
kill pid_of_daemon
```

where `pid_of_daemon` is the process ID of the daemon.

Checking the Network Connection

If either the license server daemon or vendor daemon is not running on your local computer, but is running correctly on the license server, the problem is usually caused by network software. The network software is either not running correctly or is not configured correctly. Verify that your client workstation can connect to the license manager daemons by executing the following commands on your client workstation (not the server).

```
cd matlabroot/etc
lmstat -a
```

To learn how to get help with a particular error message, see “Getting Help with License Manager Error Messages” on page 3-9. In addition, you may need to contact your system administrator or system vendor to resolve the problem.

Checking Other Startup Problems

- "Changes to License File Unread by License Manager" on page 3-7
- "MATLAB Can't Find License File" on page 3-7
- "MATLAB Is Slow Starting" on page 3-7
- "License Key Unusable on Crashed Node" on page 3-8

Changes to License File Unread by License Manager

If you change the License File, you must restart the license manager using *`matlabroot`*`/etc/lmstart`.

The `lmstart` script calls the `lmdown` script to shut down the license manager daemon. Sometimes the `lmdown` script does not succeed at its task. An effective way to shut down the license manager daemons is to use the UNIX `ps` command to check for running processes, and then terminate them manually using the UNIX `kill` command. See "Checking the Status of the License Manager Daemons" on page 3-5 for more information.

MATLAB Can't Find License File

MATLAB will fail at startup if it cannot find the License File. The installer looks for the License File in the *`matlabroot`*`/etc` directory or at the location specified in the environment variable `LM_LICENSE_FILE` or `MLM_LICENSE_FILE`.

MATLAB Is Slow Starting

MATLAB can take several minutes to start up if one of the entries in the `LM_LICENSE_FILE` environment variable on your system is set to a nonexistent license server or a license server that does not have a license manager running on it.

To work around this issue, try any of the following:

- Remove the faulty entries from the value of the `LM_LICENSE_FILE` variable.
- Add the location of your License File at the beginning of the list of paths in the `LM_LICENSE_FILE` environment variable.

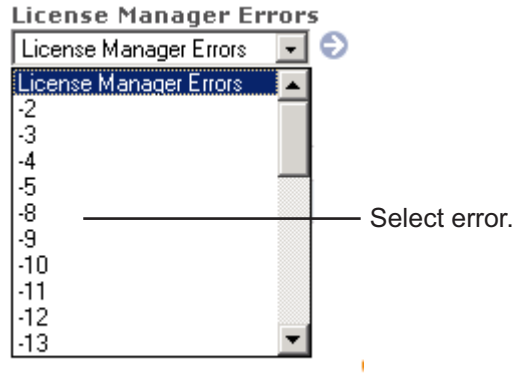
- Clear the `LM_LICENSE_FILE` variable. Note, however, that this option could impact other applications running on your system. MATLAB software does not require this variable, but other applications that use **FLEX**NET licensing often set it.
- Remove the `LM_LICENSE_FILE` variable and use the vendor-specific version environment variable for the MathWorks vendor daemon, `MLM_LICENSE_FILE`, and for other vendor daemons used at your site. The MATLAB vendor-specific environment variable only affects products from The MathWorks.
- Specify the name of the License File when starting MATLAB software by using the `-c` option to the `matlab` command. MATLAB software ignores the `LM_LICENSE_FILE` variable when this option is specified.

License Key Unusable on Crashed Node

When the node on which MATLAB is running crashes, the license manager should release the license key after about 2 hours. If the key is not released, use *`matlabroot`*`/etc/lmremove` to release it manually. The `lmremove` script allows you to remove a single user's license for a specified feature and return the license to the pool of available licenses without having to restart the license manager.

Getting Help with License Manager Error Messages

When a problem occurs, the license manager displays an error message in a window on your display and also writes the message to the **FLEX**NET licensing log file, `/var/tmp/lm_TMW.log`. Read the error message carefully; it provides information that can help solve the problem. For more complete diagnostic information about an error message, visit the Support page at the MathWorks Web site (`www.mathworks.com`) and click **Installation Troubleshooting**. On this page, you can search the support database for solutions by license manager error number or you can select the error number from the **License Manager Errors** menu.



You can also get information about license manager error messages in the *FLEXnet Licensing End User Manual*, available in PDF format in *`matlabroot`*`/etc/enduser.pdf` or at the Macrovision Corporation Web site, `www.macrovision.com`.

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